REMARKS

Claims 1, 3-5 and 7-20 are pending in this application, with claims 3, 8-10 and 14-18 withdrawn from consideration. Claims 12 and 19 are amended herein. Upon entry of this amendment, claims 1, 3-5 and 7-20 will be pending, with claims 3, 8-10 and 14-18 withdrawn from consideration. The specification is also amended, and the application is amended to include a new Sequence Listing. Entry of this amendment and reconsideration of the rejections are respectfully requested.

No new matter has been introduced by this Amendment. Support for the amendments to the claims is discussed below.

The application fails to comply with the requirements of 37 CFR 1.821 through 1.825. (Office action paragraph no. 6)

The Examiner states that the sequences on pages 14-15 should be listed in Sequence Listing, but that no Sequence Listing has been filed.

The objection is overcome by the Amendment to the Sequence Listing, providing a Sequence Listing for the application. No new matter is added by this amendment. The nine sequences listed in the Sequence Listing are the sequences on pages 14-15 of the specification.

Claims 11, 19 and 20 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. (Office action paragraph no. 8)

The Examiner refers to Example 1, page 14, as not describing what symbols T1 and T2 represent, and as referring to the non-existent "Description of the Preferred Embodiments" section.

Reconsideration of this rejection is respectfully requested in view of the amendment to the specification. For clarity, the specification has been amended at page 14, lines 22 to 25 (Example 1), and at page 15, lines 3-10 (Example 2). The reference to the "Description of the Preferred Embodiments" paragraph has been deleted; that section begins at page 4, line 16. The amendments include the formulas of species for T^1, T^2 and T^3.

Claims 12, 13 and 19 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office action paragraph no. 10)

The Examiner rejects claim 12 for the dependency on canceled claim 2. Claim 12 has been amended to depend only from any one of claims 1, 3, 4 and 5.

The Examiner states that there is insufficient antecedent basis for "said synthetic polymer" in claims 12 and 19. This recitation has been deleted from claims 12 and 19.

Claims 1, 7, 11, 12, 13, 19 and 20 are rejected under 35 U.S.C. §102(b) as being anticipated by Technion Research and Development and Foundation (Technion). (Office action paragraph no. 12)

The rejection of claims 1, 7, 11, 12, 13, 19 and 20 is respectfully traversed, and reconsideration is requested.

At page 5, line 6 of the Office Action, the Examiner has noted that Technion shows a composition comprising DNA associated with metallic groups in Fig. 3A. However, contrary to the Examiner's observation, Technion does not show DNA having associated therewith metal groups. This is because:

The method described in Technion is well-known in the art, and it comprises coating DNA with a metal. In other words, according to Technion, DNA is associated with a metal itself, whereas according to the present invention, DNA is associated with metal groups. The association of DNA with the metal itself in Technion is appreciated from, for example, claims 49 to 52 stating that the nucleotide chain carries an electrically conducting substance (claim 50) and said substance is metal such as silver or gold (claims 51 and 52). In summary, Technion teaches use of nucleotide associated with metals or metal clusters, whereas the present invention describes use of DNA associated with "functional groups containing metallic ions." The "functional groups containing metallic ions" used in the present invention are positive hole-transporting functional groups, electron-transporting functional groups or a combination recited in claim 1.

The above difference between the "metals" associated to the nucleotide and the "metallic ions-containing functional groups" associated to the nucleotide will be further described.

Comparing the size of the nucleotide with the size of the metal or metal cluster in Technion, the metal or metal cluster has a remarkably larger size than the nucleotide, and thus it is difficult to select the metal to be applied to each nucleotide residue. On the other hand, according to the present invention, the metallic ion-containing functional group has a size substantially equivalent to the

nucleotide, and thus it becomes possible to selectively apply the functional group to each nucleotide reside. That is, the present invention is based on this feature.

In this connection, Applicants note that Fig. 5 illustrates a p/n junction formed by a p-type substance 510 bonded to one oligonucleotide 512 and a n-type substance 514 bonded to another oligonucleotide sequence 516. However, the illustrated p/n junction means only that a type or n-type substance can be bonded to a block consisting of eight (8) DNA residues. It should be noted that according to Technion, a p-type or n-type substance, i.e., metal ion-containing functional group, cannot be bonded to each of the DNA residues.

Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. (Office action paragraph no. 15)

Reconsideration of the objection is respectfully requested in view of the above arguments traversing the rejection of base claim 1.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
Sequence Listing and Verification Statement

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